

RAW SEQUENCE LISTING

**The Biotechnology Systems Branch of the Scientific and Technical
Information Center (STIC) no errors detected.**

Application Serial Number: 10/567/282
Source: IFWP
Date Processed by STIC: 2/13/06

ENTERED



IFWP

RAW SEQUENCE LISTING

DATE: 02/13/2006

PATENT APPLICATION: US/10/567,282

TIME: 12:47:48

Input Set : E:\9301-237-999.txt

Output Set: N:\CRF4\02132006\J567282.raw

```

4 <110> APPLICANT: Schadt, Eric E.
5     Monks, Stephanie A.
7 <120> TITLE OF INVENTION: COMPUTER SYSTEMS AND METHODS FOR
8     INFERRING CASUALITY FROM CELLULAR CONSTITUENT ABUNDANCE DATA
11 <130> FILE REFERENCE: 9301-237-228
C--> 13 <140> CURRENT APPLICATION NUMBER: US/10/567,282
C--> 14 <141> CURRENT FILING DATE: 2006-02-03
16 <150> PRIOR APPLICATION NUMBER: 60/575,499
17 <151> PRIOR FILING DATE: 2004-05-28
19 <150> PRIOR APPLICATION NUMBER: 60/497,470
20 <151> PRIOR FILING DATE: 2003-08-21
22 <150> PRIOR APPLICATION NUMBER: 60/492,682
23 <151> PRIOR FILING DATE: 2003-08-05
25 <160> NUMBER OF SEQ ID NOS: 24
27 <170> SOFTWARE: FastSEQ for Windows Version 4.0
29 <210> SEQ ID NO: 1
30 <211> LENGTH: 572
31 <212> TYPE: PRT
32 <213> ORGANISM: homo sapiens polypeptide
34 <220> FEATURE:
35 <223> OTHER INFORMATION: malic enzyme ME1
37 <400> SEQUENCE: 1
38 Met Glu Pro Glu Ala Pro Arg Arg Arg His Thr His Gln Arg Gly Tyr
39 1          5          10          15
40 Leu Leu Thr Arg Asn Pro His Leu Asn Lys Asp Leu Ala Phe Thr Leu
41          20          25          30
42 Glu Glu Arg Gln Gln Leu Asn Ile His Gly Leu Leu Pro Pro Ser Phe
43          35          40          45
44 Asn Ser Gln Glu Ile Gln Val Leu Arg Val Val Lys Asn Phe Glu His
45          50          55          60
46 Leu Asn Ser Asp Phe Asp Arg Tyr Leu Leu Leu Met Asp Leu Gln Asp
47 65          70          75          80
48 Arg Asn Glu Lys Leu Phe Tyr Arg Val Leu Thr Ser Asp Ile Glu Lys
49          85          90          95
50 Phe Met Pro Ile Val Tyr Thr Pro Thr Val Gly Leu Ala Cys Gln Gln
51          100         105         110
52 Tyr Ser Leu Val Phe Arg Lys Pro Arg Gly Leu Phe Ile Thr Ile His
53          115         120         125
54 Asp Arg Gly His Ile Ala Ser Val Leu Asn Ala Trp Pro Glu Asp Val
55          130         135         140
56 Ile Lys Ala Ile Val Val Thr Asp Gly Glu Arg Ile Leu Gly Leu Gly
57 145         150         155         160
58 Asp Leu Gly Cys Asn Gly Met Gly Ile Pro Val Gly Lys Leu Ala Leu

```

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```

59          165          170          175
60 Tyr Thr Ala Cys Gly Gly Met Asn Pro Gln Glu Cys Leu Pro Val Ile
61          180          185          190
62 Leu Asp Val Gly Thr Glu Asn Glu Glu Leu Leu Lys Asp Pro Leu Tyr
63          195          200          205
64 Ile Gly Leu Arg Gln Arg Arg Val Arg Gly Ser Glu Tyr Asp Asp Phe
65          210          215          220
66 Leu Asp Glu Phe Met Glu Ala Val Ser Ser Lys Tyr Gly Met Asn Cys
67 225          230          235          240
68 Leu Ile Gln Phe Glu Asp Phe Ala Asn Val Asn Ala Phe Arg Leu Leu
69          245          250          255
70 Asn Lys Tyr Arg Asn Gln Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly
71          260          265          270
72 Thr Ala Ser Val Ala Val Ala Gly Leu Leu Ala Ala Leu Arg Ile Thr
73          275          280          285
74 Lys Asn Lys Leu Ser Asp Gln Thr Ile Leu Phe Gln Gly Ala Gly Glu
75          290          295          300
76 Ala Ala Leu Gly Ile Ala His Leu Ile Val Met Ala Leu Glu Lys Glu
77 305          310          315          320
78 Gly Leu Pro Lys Glu Lys Ala Ile Lys Lys Ile Trp Leu Val Asp Ser
79          325          330          335
80 Lys Gly Leu Ile Val Lys Gly Arg Ala Ser Leu Thr Gln Glu Lys Glu
81          340          345          350
82 Lys Phe Ala His Glu His Glu Glu Met Lys Asn Leu Glu Ala Ile Val
83          355          360          365
84 Gln Glu Ile Lys Pro Thr Ala Leu Ile Gly Val Ala Ala Ile Gly Gly
85          370          375          380
86 Ala Phe Ser Glu Gln Ile Leu Lys Asp Met Ala Ala Phe Asn Glu Arg
87 385          390          395          400
88 Pro Ile Ile Phe Ala Leu Ser Asn Pro Thr Ser Lys Ala Glu Cys Ser
89          405          410          415
90 Ala Glu Gln Cys Tyr Lys Ile Thr Lys Gly Arg Ala Ile Phe Ala Ser
91          420          425          430
92 Gly Ser Pro Phe Asp Pro Val Thr Leu Pro Asn Gly Gln Thr Leu Tyr
93          435          440          445
94 Pro Gly Gln Gly Asn Asn Ser Tyr Val Phe Pro Gly Val Ala Leu Gly
95          450          455          460
96 Val Val Ala Cys Gly Leu Arg Gln Ile Thr Asp Asn Ile Phe Leu Thr
97 465          470          475          480
98 Thr Ala Glu Val Ile Ala Gln Gln Val Ser Asp Lys His Leu Glu Glu
99          485          490          495
100 Gly Arg Leu Tyr Pro Pro Leu Asn Thr Ile Arg Asp Val Ser Leu Lys
101          500          505          510
102 Ile Ala Glu Lys Ile Val Lys Asp Ala Tyr Gln Glu Lys Thr Ala Thr
103          515          520          525
104 Val Tyr Pro Glu Pro Gln Asn Lys Glu Ala Phe Val Arg Ser Gln Met
105          530          535          540
106 Tyr Ser Thr Asp Tyr Asp Gln Ile Leu Pro Asp Cys Tyr Ser Trp Pro
107 545          550          555          560

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```

108 Glu Glu Val Gln Lys Ile Gln Thr Lys Val Asp Gln
109          565          570
112 <210> SEQ ID NO: 2
113 <211> LENGTH: 572
114 <212> TYPE: PRT
115 <213> ORGANISM: mus musculus polypeptide
117 <220> FEATURE:
118 <223> OTHER INFORMATION: Mod1
120 <400> SEQUENCE: 2
121 Met Glu Pro Arg Ala Pro Arg Arg Arg His Thr His Gln Arg Gly Tyr
122 1          5          10          15
123 Leu Leu Thr Arg Asp Pro His Leu Asn Lys Asp Leu Ala Phe Thr Leu
124          20          25          30
125 Glu Glu Arg Gln Gln Leu Asn Ile His Gly Leu Leu Pro Pro Cys Ile
126          35          40          45
127 Ile Ser Gln Glu Leu Gln Val Leu Arg Ile Ile Lys Asn Phe Glu Arg
128          50          55          60
129 Leu Asn Ser Asp Phe Asp Arg Tyr Leu Leu Leu Met Asp Leu Gln Asp
130 65          70          75          80
131 Arg Asn Glu Lys Leu Phe Tyr Ser Val Leu Met Ser Asp Val Glu Lys
132          85          90          95
133 Phe Met Pro Ile Val Tyr Thr Pro Thr Val Gly Leu Ala Cys Gln Gln
134          100          105          110
135 Tyr Ser Leu Ala Phe Arg Lys Pro Arg Gly Leu Phe Ile Ser Ile His
136          115          120          125
137 Asp Lys Gly His Ile Ala Ser Val Leu Asn Ala Trp Pro Glu Asp Val
138          130          135          140
139 Val Lys Ala Ile Val Val Thr Asp Gly Glu Arg Ile Leu Gly Leu Gly
140 145          150          155          160
141 Asp Leu Gly Cys Asn Gly Met Gly Ile Pro Val Gly Lys Leu Ala Leu
142          165          170          175
143 Tyr Thr Ala Cys Gly Gly Val Asn Pro Gln Gln Cys Leu Pro Ile Thr
144          180          185          190
145 Leu Asp Val Gly Thr Glu Asn Glu Glu Leu Leu Lys Asp Pro Leu Tyr
146          195          200          205
147 Ile Gly Leu Arg His Arg Arg Val Arg Gly Pro Glu Tyr Asp Ala Phe
148          210          215          220
149 Leu Asp Glu Phe Met Glu Ala Ala Ser Ser Lys Tyr Gly Met Asn Cys
150 225          230          235          240
151 Leu Ile Gln Phe Glu Asp Phe Ala Asn Arg Asn Ala Phe Arg Leu Leu
152          245          250          255
153 Asn Lys Tyr Arg Asn Lys Tyr Cys Thr Phe Asn Asp Asp Ile Gln Gly
154          260          265          270
155 Thr Ala Ser Val Ala Val Ala Gly Leu Leu Ala Ala Leu Arg Ile Thr
156          275          280          285
157 Lys Asn Lys Leu Ser Asp Gln Thr Val Leu Phe Gln Gly Ala Gly Glu
158          290          295          300
159 Ala Ala Leu Gly Ile Ala His Leu Val Val Met Ala Met Glu Lys Glu
160 305          310          315          320

```

RAW SEQUENCE LISTING

DATE: 02/13/2006

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TIME: 12:47:48

Input Set : E:\9301-237-999.txt

Output Set: N:\CRF4\02132006\J567282.raw

```

161 Gly Leu Ser Lys Glu Asn Ala Arg Lys Lys Ile Trp Leu Val Asp Ser
162           325           330           335
163 Lys Gly Leu Ile Val Lys Gly Arg Ala Ser Leu Thr Glu Glu Lys Glu
164           340           345           350
165 Val Phe Ala His Glu His Glu Glu Met Lys Asn Leu Glu Ala Ile Val
166           355           360           365
167 Gln Lys Ile Lys Pro Thr Ala Leu Ile Gly Val Ala Ala Ile Gly Gly
168           370           375           380
169 Ala Phe Thr Glu Gln Ile Leu Lys Asp Met Ala Ala Phe Asn Glu Arg
170 385           390           395           400
171 Pro Ile Ile Phe Ala Leu Ser Ser Pro Thr Ser Lys Ala Glu Cys Ser
172           405           410           415
173 Ala Asp Glu Cys Tyr Lys Val Thr Lys Gly Arg Ala Ile Phe Ala Ser
174           420           425           430
175 Gly Ser Pro Phe Asp Pro Val Thr Leu Pro Asp Gly Arg Thr Leu Phe
176           435           440           445
177 Pro Gly Gln Gly Asn Asn Ser Tyr Val Phe Pro Gly Val Ala Leu Gly
178           450           455           460
179 Val Val Ala Cys Gly Leu Arg His Ile Asp Asp Lys Val Ile Leu Thr
180 465           470           475           480
181 Thr Arg Glu Val Ile Ser Gln Gln Val Ser Asp Lys His Leu Gln Glu
182           485           490           495
183 Gly Arg Leu Tyr Pro Pro Leu Asn Thr Ile Arg Gly Val Ser Leu Lys
184           500           505           510
185 Ile Ala Val Lys Ile Val Gln Asp Ala Tyr Lys Glu Lys Met Ala Thr
186           515           520           525
187 Val Tyr Pro Glu Pro Gln Asn Lys Glu Glu Phe Val Ser Ser Gln Met
188           530           535           540
189 Tyr Ser Thr Asn Tyr Asp Gln Ile Leu Pro Asp Cys Tyr Pro Trp Pro
190 545           550           555           560
191 Ala Glu Val Gln Lys Ile Gln Thr Lys Val Asn Gln
192           565           570
195 <210> SEQ ID NO: 3
196 <211> LENGTH: 564
197 <212> TYPE: PRT
198 <213> ORGANISM: homo sapiens polypeptide - ME3
200 <220> FEATURE:
201 <221> NAME/KEY: VARIANT
202 <222> LOCATION: 9, 18, 27, 55, 66, 88, 157, 199, 219, 305, 307, 323, 387,
203           519
204 <223> OTHER INFORMATION: Xaa = Any Amino Acid
206 <400> SEQUENCE: 3
W--> 207 Ile Lys Glu Lys Gly Lys Pro Leu Xaa Leu Asn Pro Arg Thr Asn Lys
208 1           5           10           15
W--> 209 Gly Xaa Ala Phe Thr Leu Gln Glu Arg Gln Xaa Leu Gly Leu Gln Gly
210           20           25           30
211 Leu Leu Pro Pro Lys Ile Glu Thr Gln Asp Ile Gln Ala Leu Arg Phe
212           35           40           45
W--> 213 His Arg Asn Leu Lys Lys Xaa Thr Ser Pro Leu Glu Lys Tyr Ile Tyr

```

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Input Set : E:\9301-237-999.txt

Output Set: N:\CRF4\02132006\J567282.raw

```

      214      50      55      60
W--> 215 Ile Xaa Gly Ile Gln Glu Arg Asn Glu Lys Leu Phe Tyr Arg Ile Leu
      216 65      70      75      80
W--> 217 Gln Asp Asp Ile Glu Ser Leu Xaa Pro Ile Val Tyr Thr Pro Thr Val
      218      85      90      95
      219 Gly Leu Ala Cys Ser Gln Tyr Gly His Ile Phe Arg Arg Pro Lys Gly
      220      100      105      110
      221 Leu Phe Ile Ser Ile Ser Asp Arg Gly His Val Arg Ser Ile Val Asp
      222      115      120      125
      223 Asn Trp Pro Glu Asn His Val Lys Ala Val Val Val Thr Asp Gly Glu
      224      130      135      140
W--> 225 Arg Ile Leu Gly Leu Gly Asp Leu Gly Val Tyr Gly Xaa Gly Ile Pro
      226 145      150      155      160
      227 Val Gly Lys Leu Cys Leu Tyr Thr Ala Cys Ala Gly Ile Arg Pro Asp
      228      165      170      175
      229 Arg Cys Leu Pro Val Cys Ile Asp Val Gly Thr Asp Asn Ile Ala Leu
      230      180      185      190
W--> 231 Leu Lys Asp Pro Phe Tyr Xaa Gly Leu Tyr Gln Lys Arg Asp Arg Thr
      232      195      200      205
W--> 233 Gln Gln Tyr Asp Asp Leu Ile Asp Glu Phe Xaa Lys Ala Ile Thr Asp
      234      210      215      220
      235 Arg Tyr Gly Arg Asn Thr Leu Ile Gln Phe Glu Asp Phe Gly Asn His
      236 225      230      235      240
      237 Asn Ala Phe Arg Phe Leu Arg Lys Tyr Arg Glu Lys Tyr Cys Thr Phe
      238      245      250      255
      239 Asn Asp Asp Ile Gln Gly Thr Ala Ala Val Ala Leu Ala Gly Leu Leu
      240      260      265      270
      241 Ala Ala Gln Lys Val Ile Ser Lys Pro Ile Ser Glu His Lys Ile Leu
      242      275      280      285
      243 Phe Leu Gly Ala Gly Glu Ala Leu Gly Ile Ala Asn Leu Ile Val
      244      290      295      300
W--> 245 Xaa Ser Xaa Val Glu Asn Gly Leu Ser Glu Gln Glu Ala Gln Lys Lys
      246 305      310      315      320
W--> 247 Ile Trp Xaa Phe Asp Lys Tyr Gly Leu Leu Val Lys Gly Arg Lys Ala
      248      325      330      335
      249 Lys Ile Asp Ser Tyr Gln Glu Pro Phe Thr His Ser Ala Pro Glu Ser
      250      340      345      350
      251 Ile Pro Asp Thr Phe Glu Asp Ala Val Asn Ile Leu Lys Pro Ser Thr
      252      355      360      365
      253 Ile Ile Gly Val Ala Gly Ala Gly Arg Leu Phe Thr Pro Asp Val Ile
      254      370      375      380
W--> 255 Arg Ala Xaa Ala Ser Ile Asn Glu Arg Pro Val Ile Phe Ala Leu Ser
      256 385      390      395      400
      257 Asn Pro Thr Ala Gln Ala Glu Cys Thr Ala Glu Glu Ala Tyr Thr Leu
      258      405      410      415
      259 Thr Glu Gly Arg Cys Leu Phe Ala Ser Gly Ser Pro Phe Gly Pro Val
      260      420      425      430
      261 Lys Leu Thr Asp Gly Arg Val Phe Thr Pro Gly Gln Gly Asn Asn Val
      262      435      440      445

```

RAW SEQUENCE LISTING ERROR SUMMARY
PATENT APPLICATION: US/10/567,282

DATE: 02/13/2006
TIME: 12:47:49

Input Set : E:\9301-237-999.txt
Output Set: N:\CRF4\02132006\J567282.raw

Please Note:

Use of n and/or Xaa have been detected in the Sequence Listing. Please review the Sequence Listing to ensure that a corresponding explanation is presented in the <220> to <223> fields of each sequence which presents at least one n or Xaa.

Seq#:3; Xaa Pos. 9,18,27,55,66,88,157,199,219,305,307,323,387,519
Seq#:18; N Pos. 7,8

Invalid Line Length:

The rules require that a line not exceed 72 characters in length. This includes spaces.

Seq#:5; Line(s) 372
Seq#:6; Line(s) 396

VERIFICATION SUMMARY

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PATENT APPLICATION: US/10/567,282

TIME: 12:47:49

Input Set : E:\9301-237-999.txt

Output Set: N:\CRF4\02132006\J567282.raw

L:13 M:270 C: Current Application Number differs, Replaced Current Application Number
L:14 M:271 C: Current Filing Date differs, Replaced Current Filing Date
L:207 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:0
L:209 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:16
L:213 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:48
L:215 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:64
L:217 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:80
L:225 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:144
L:231 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:192
L:233 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:208
L:245 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:304
L:247 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:320
L:255 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:384
L:271 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:3 after pos.:512
L:970 M:341 W: (46) "n" or "Xaa" used, for SEQ ID#:18 after pos.:0